



Re-thinking wastewater landscapes: Combining innovative strategies to address tomorrow's urban wastewater treatment challenges

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Abstract:

Most major cities worldwide face urban water management challenges relating to drinking supply, stormwater and wastewater treatment, and ecological preservation. In light of climate change and finite natural resources, addressing these challenges in sustainable ways will require innovative solutions arising from interdisciplinary collaboration. This article summarizes five major urban water management strategies that bridge the fields of engineering, ecology, landscape architecture, and urban planning. A conceptual implementation of these strategies is demonstrated through a design for a small constructed wetland treatment system in San Francisco, California. The proposed decentralized system described in this article consists of a detention basin, vegetated and open free water surface wetlands, and ultraviolet disinfection. In wet weather, the system would detain and treat combined sewer discharges (CSD), and in dry weather it would treat residential greywater for toilet flushing and irrigation in a nearby neighborhood. It is designed to adapt over time to changing climatic conditions and treatment demands. Importantly, this proposal demonstrates how constructed wetland engineers can incorporate multiple benefits into their systems, offering a vision of how wastewater infrastructure can be an attractive community, educational, recreational, and habitat amenity through the integration of engineering, ecology, and landscape design.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Policymaker

Exposure :

weather or climate related pathway by which climate change affects health

Climate Change and Human Health Literature Portal

Food/Water Quality, Food/Water Security

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

United States

Health Co-Benefit/Co-Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Review

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified